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Immersive Realities in the “Place of Flowers” and Southern Sea Country, Australia: Slow Science, Artistic Visualizations, and Deep Time Stories of the Earth Otherwise

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This article explores how immersion in deep space-times of the earth, Indigenous storytelling, and virtual realities disrupt dystopian futures shaped by Western scientific perspectives on environmental change and climate events. As a Nyul Nyul sand artist, Larrakia story-keeper, physical geographer, cultural geographer, and creative transmedia producer, we reflect on our journey across First Nations lands through the immersive full-dome film *The Earth Above: A Deep Time View of Australia's Epic History* and the exhibition *The Fire Within*, celebrating the 2024 National Aboriginal and Islanders Day Observance Committee week theme, “Keep the fire burning! Blak, loud and proud.” *The Earth Above* integrates Indigenous and Western scientific knowledges, highlighting four cultural stories linked by sand artist Lowell Hunter's footwork along Nyul Nyul Sea Country (Western Australia). One story, about Girraween Lagoon (the “Place of Flowers”), uses a 150,000-year-old sedimentary record to reveal climatic and ecological shifts, interpreted through the Larrakia seasonal calendar. The article shows that science stories (Indigenous and Western) of environmental change when augmented by immersive technologies can engage diverse publics and enact imaginaries of the earth otherwise. This human and more-than-human collaborative praxis of crafting public stories is a slow “pedagogical practice” (Liboiron 2020, 102) of exchange and gift-giving with Country (Buku-Larrgajay Mulka Centre 1999). **Key Words:** *exchange, Indigenous knowledge, responsibility, transmedia, Western science.*

Story is so powerful: a story can heal, a story can kill.

—Tyson Yunkaporta (2024a)

Story ... can be more creative than a Cambrian explosion, or more destructive than a nuclear explosion. Story that maintains the continuity of creation requires a lot more work, however, and it develops over time from thousands of data sets held in relationships.

—Tyson Yunkaporta (2024b, 145)

Michele: Tyson Yunkaporta (2024b), an Aboriginal Australian scholar from the Apalech Clan (Queensland) illuminates the

creativity and power of the “right story” (20) that can heal Country. This article illuminates such deep time and multilayered stories in lake and coastal environments of Australia that are held in data sets and reciprocal relationships with Country. Country, an Aboriginal English term used by First Nations peoples centers their homelands and the “co-becomings of place” that emerge through relationships between humans and nonhumans, including ancestors and supernatural beings (Bawaka Country et al. 2023, 1205; Langton 2023). Country encompassing land, sea, and sky is woven with sacred and kinship relationships that unfold in everyday cultural practices, songs, dances, rituals, ceremonies, laws,

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and creation stories (Buku-Larrŋgay Mulka Centre 1999; Hunter and Lobo 2024). As a Nyul Nyul sand artist, Larrakia traditional custodian, physical geographer, cultural geographer, and creative transmedia producer, we come together to maintain this “continuity of creation” (Yunkaporta 2024b, 145) through immersive science storytelling that interrupts the racial, colonial, and capitalist logics that has stolen and possessed unceded lands of First Nations peoples in so-called Australia and beyond (Morehouse and Cigliano 2021; Lobo and Parsons 2023).

This article illuminates the collaborative praxis of crafting two public stories, *Place of Flowers* and *Embers of Connection* through a slow “pedagogical process” (Liboiron 2020, 102) that unfolds across and within more-than-human deep space-times of Country. It involves exchanging knowledge, colearning, gift-giving, and writing with Country that privileges connection, humility, and an ethics of reciprocity that strays from the extractive logics of Western academic norms that reproduce colonial land relations of entitlement (Buku-Larrŋgay Mulka Centre 1999; Kwaymullina 2020; Liboiron 2020; Bawaka Country et al. 2023). Led by Indigenous story-keepers and language speakers, we circumvent such norms to contribute to engaged scholarship and public geographies. We build on research in human geography by the Bawaka Collective in Australia led by Bawaka Country, Yolŋu sisters, elders, and caretakers and non-Indigenous human geographers that call for nourishing relationships of reciprocity in intercultural communication (Bawaka Country et al. 2023).

As authors we enacted reciprocity with Country through the collaborative praxis of science storytelling. Monthly meetings overflowed with new ideas and scribbled notes that were followed up by the circulation of another new draft of the article that could experiment further with illuminating the polyvocality of many Countries that are sacred, sentient, and kin. These meetings were interspersed by face-to-face events and personal communication that kept ideas moving. In addition, the *Embers of Connection* exhibition space sparked three-way storytelling at the site that entangled Lowell Hunter, Michele Lobo, and Martin Potter. We recorded these conversations, then listened and relistened to the audio recordings. Lorraine Williams and Cassandra Rowe continued conversing about the Larrakia Seasons.

The first section of the article focuses on the “Place of Flowers,” one of the four cultural deep time stories told in the full dome planetarium film, *The Earth Above: A Deep Time View of Australia’s Epic History*. The film weaves Larrakia oral stories of seasonal change with western paleoecological stories of Girraween Lagoon (Northern Territory). The second section of the article makes a transition to another method of immersive digital storytelling that centers the site-specific sand artwork produced by Nyul Nyul saltwater man Lowell’s dancing feet on Southern Sea Country. *Embers of Connection: A Journey Through Fire, Sand and Country* is Lowell’s story in the exhibition, *The Fire Within*, held at Deakin University (Victoria) to celebrate the 2024 National Aboriginal and Islanders Day Observance Committee (NAIDOC) week theme, “Keep the fire burning! Blak, loud and proud.” Figure 1 provides a reference to the approximate geography of key locations discussed in this article.

Martin: Although the initial opportunity for the creation of *The Earth Above* came from purely practical access opportunities (i.e., access to a planetarium), the development of the work emerged from traditional stories and contemporary framings of those stories. A story told by a number of Aboriginal Australian nations is one of a solid sky dome surrounding the Earth. Beyond the cover of the dome is where the ancestors are, keeping watch over all those currently on Earth. On Earth we can see the watchful eyes of the ancestors as stars, shining through holes in the cover of the dome. The artwork *Kungkarangkalpa, Seven Sisters Dreaming* by Tjanpi Desert Weavers (2020) captures this story. The story offered a context for the creation of several deep time stories for planetarium settings, with the dome itself providing a unique opportunity to embody not just an Indigenous-led story but an embodied cosmological way of being and feeling. The interrelation of people on Earth and the ancestors beyond the cover of the dome offers an evocative framing, the creation of an entangled ancestor point of view that connects to the audience’s point of viewing. The framing of the medium itself within the context of an Indigenous worldview could hopefully enable all audiences to reflect on their sense of place, belonging, and purpose, firmly grounded and informed by a complex, culturally dynamic science and series of technologies, evolved from a reciprocal relationship with the land, waterways, and skies that have



Figure 1. Stylized map outline of Australia with approximate locations of key sites (Girraween Lagoon, Jiigurru [Lizard Island], Warrnambool, Geelong, You Yangs and Beagle Bay). Traditional owner groups identified in this article are indicated on this figure. Image by Martin Potter.

nurtured thousands of generations of Australian Aboriginal peoples (Harle, Abdilla, and Newman 2018).

The Earth Above is the result of a collaboration with Indigenous knowledge holders and artists, Indigenous and non-Indigenous researchers, and non-Indigenous creatives in a “living,” participatory, transmedia work. “Living” as the film itself divides in a simple cellular way into different sections that can attach to other projects and continue to evolve through engagement with other media, platforms, creatives, and audiences. It is also living because of the ongoing dialogical relationships that defined its creation. The film is a shift away from a centralized vision of filmmaking—the auteur/director. It is a

collectivized storytelling practice—the director credit is to the Ruwe Collective, which is about twenty people. It builds on the research and knowledges of many. The framing of *The Earth Above* then sets a frame for storying the Place of Flowers (Girraween Lagoon)

The Place of Flowers

Lorraine: The flowers of Girraween Lagoon hold the knowledge of our seven seasons, and they also unlock a deep time story. In the landscapes of the deep past we see resilience and change, and it is part of who we are. Combining our traditional knowledge

with Western science shows that changes are happening faster than ever. This place of flowers now changes on human time, as the suburbs of Darwin city get closer. Larrakia were the first people to walk across this land. We are the custodians of this Country. We care about keeping this Country healthy. Take this message with you.

Cassandra: What underlies the Quaternary sciences is the need for very long-term pictures of ecosystems, of landscapes, of climates, to understand how they came to be, function, and change. This is to be able to look forward through the lens of the past (so to speak), in search of a modern analogue, and so to find and understand that moment in time comparable to how the world is changing today. Sometimes I wonder if what we are actually looking for is the answer that our current environment will be okay. There will always be a professional disciplinary “why,” but there also exists a personal “why.” For me as a paleoecologist, the journey through cycles in time, on Country as well as in the laboratory, is an immersive, careful, thorough, nonextractive and passionate environmental experience of storytelling that calls for more than just laborious hard work and scientific precision. Biophysical descriptions of landscape, in all their detail of hydrology, vegetation, geology, soils, fire, and climate, have their place but can never convey that sense of the land in all its smells, sounds, textures, colors, and light. Nor can they speak to us about the effect of place on us, what it means to feel a sense of belonging to a particular landscape (Colloff 2020).

As not only a woman working in a field dominated by White male scientists, but a midcareer researcher just trying to stay afloat, I regret that the intensities and forces of love, curiosity, wonder, beauty, and surprise that keep pulling me back to Country, and coerce me to stay in the discipline of paleoecology amid academic precarity, are rarely captured and communicated in traditional scientific outputs. Where can I place (and share) the respect and admiration felt for a landscape? It seems numbers remain the priority, and so instead, the messages communicated in scientific papers privilege Western scientific paradigms with fixed data, and the anthropocentric understandings are always the same—too overstructured, overtheorized, measurable, and exclusionary, even when supported through collaborative partnerships with Indigenous peoples. Therefore, although such deep exploratory scientific work in

paleoecology augments as well as communicates immersive realities using new technologies in the field and the laboratory, the exchange of knowledge that might follow ethical guidelines and invites coauthorship risks being crowded out, lost, or even extractive. Although Girraween Lagoon holds a 150,000-year sedimentary story of climatic and ecological changes in the tropical savanna lands of northern Australia, it is foremost a place of belonging for Larrakia people. Belonging is entangled in Larrakia knowledge systems that are based on closely observed natural phenomena, and an ability to link Country with all that live in it through attributing meaning and relational values (Wiynjorrotj 2005).

Lorraine: When we look at this place, we remember how our Old People lived on this Country, survived off this Country, and performed ceremonies on this Country. All are important to who we are today as Larrakia people, for Larrakia people, because the plants and the animals that we see around here, and the *Gwoyelwa*, the land, and the things that we did on this Country, like burning the grass to manipulate it, to bring the animals back in. To look after the plants and the animals to make the flowers grow, to live in the seasons, is an important part of being Larrakia.

When we walk on Country we are aware that we do not walk alone. We are being observed and we are still in the presence of elders. We cry out to Country so that we can wake up Country, so the ancestors can hear us, to alert the ancestors, plants, and animals. For Larrakia/Wulna people, Welcome to Country is done at the right time and with the right people, in the right context. For this project, Donna and Annie (as traditional owners) were informing our ancestors who they were and that they were here, as in being present, here to be observed, here to show their commitment to carrying on culture, to learn, teach, and show the ancestors that they will continue to look after Country. We do this to ask for protection for all involved in the project on this journey together.

Cassandra: The Larrakia/Wulna Welcome to Country is so you can see and learn from the landscape. As traditional owners, Lorraine, Annie, and Donna welcomed me to their homelands with these words that privilege respectful relationships with the old people and Country who teach and nourish life (Langton 2023). This is a very different narrative power and projection to the one I might have. What Lorraine teaches me is the difference between

seeing and describing versus relationships with and giving meaning to; explaining versus experiencing. It is as Griffiths (2018) stated, we need narratives that weave together people and nature, history and natural history, of the intimately known and beloved local worlds. As Watson (2014) also highlighted, it is to install on the public mind a deeper and more honest knowledge of the land—that we need a relationship with the land. What Lorraine gives voice to is the way places (as Country) are always exchanging in time and location. To exchange means to take but to also give or offer, as geographer Liboiron (2020), a Red River Métis/Michif and settler from Canada says. What I am now beginning to understand is that Girraween, through time, is exchanging with a whole range of climatic scenarios, variations in sea level, as well as with people. Of this “take but give” exchange, Girraween understands what it must

go through. For me to bear witness to this exchange under the microscope is a very lucky and humbling thing; that the landscape is sharing in this way and after so much time.

Michele: These exchanges over deep space-times of Country that is animate and sacred disrupt the anthropocentrism and authority of the Western scientific story of Girraween Lagoon. As a member of the audience watching the immersive film *The Earth Above* at the Melbourne Planetarium, I was immersed in flora and fauna worlds that changed with the Larrakia seasons and spread new messages from Country (see Figure 2).

Lorraine: Different flowers show us when the skies will be clear, when wet season will come, when turtles and birds will lay their eggs, even when to burn Country. Old lady Topsy told me that it is the flowers that call up the cold weather.

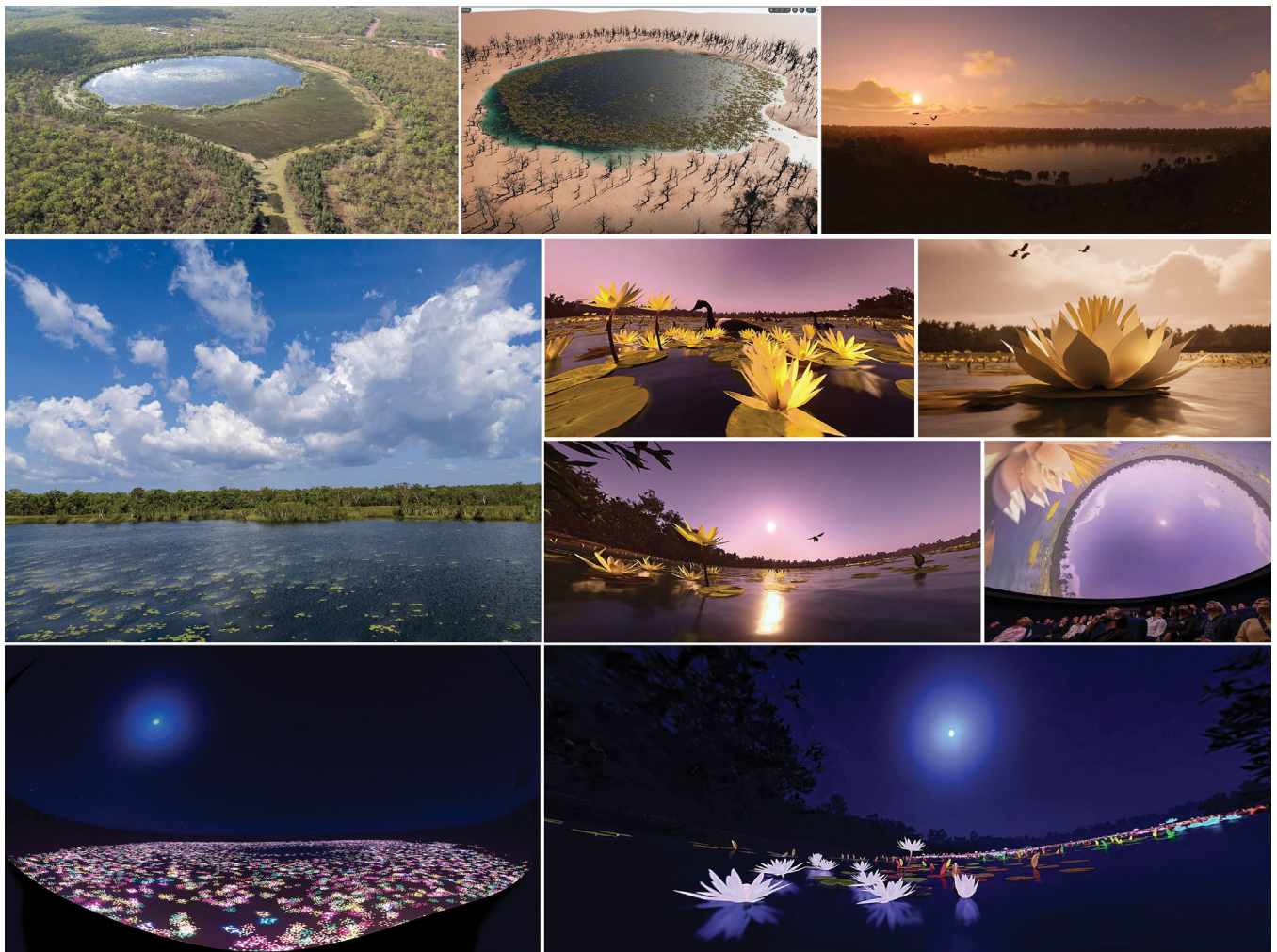


Figure 2. Girraween Lagoon at different seasons and times: Composite image of drone photographs and digital visualizations. Image by Martin Potter.

Cassandra: Ultimately, Lorraine taught me about the conversations between plants and climate, about how the plants call the seasons. I did not know about these conversations.

Michele: Thinking with philosopher Kyle Whyte (2020), a citizen of the Potawatomi Nation, we know that conversations that take time are important in repairing relationships of “consent, trust, accountability, and reciprocity” (1) and communicating more-than-human stories of kinship with ancestors, spirit beings, and flowers. In spreading these stories, “decolonial leaps” (1) become possible through immersive technologies that augment material realities (Lobo 2024) by respecting Larrakia knowledges of the past, present, and future of the seasons across Girraween Lagoon. Following Harle, Abdilla, and Newman (2018), however, who call for decolonizing the digital, Martin questions the neutrality of technology as an instrument in solving perceived puzzling problems of Western science. Technology emerges as a cultural practice that provides insights into the complexity of seasons through Larrakia knowledge systems in Girraween Lagoon that decenter the unacknowledged values and assumptions embedded in Western scientific understandings of the same place.

Martin: The practice of decolonizing the digital is important in entangling and weaving new stories or the “right story” (Yunkaporta 2024b, 20) of the Earth through dialogical relationships. Freire (1970) outlined a system of values that form the precondition for “true” dialogue as a series of layers—love, humility, and faith in others are the foundations, at which point “dialogue becomes a horizontal relationship of which mutual trust between the dialoguers is the logical consequence” (92). Trust flows naturally from this foundation. Freire (1970), however, has one last precondition:

Finally, true dialogue cannot exist unless the dialoguers engage in critical thinking—thinking which discerns an indivisible solidarity between the world and the people and admits to no dichotomy between them—thinking which perceives reality as process, as transformation, rather than as a static entity—thinking which does not separate itself from action, but constantly immerses itself in temporality without fear of the risks involved. (Freire 1970, 92)

In producing the film, dialogue was ongoing and assisted in defining the problem, identifying Larrakia needs, developing shared goals, points of

commonality, and making compromises. From our dialogue a variety of actions emerged that called for reflection and renegotiation. This continuous dialogue and reassessment became a core part of the work of developing relationships and producing the film. The story emerges through the material embodiment of knowledge woven from many threads—threads of knowledges, threads of stories, threads spun by many different people over time. Lambert (2012), founder of the Center of Digital Storytelling (StoryCenter), argued that every community has a living memory of itself, an awareness of a collective identity woven of a thousand individual stories. In *The Earth Above*, interludes of sand artwork on Lowell’s Nyul Nyul Sea Country created the feeling of movement through space and time that was important in weaving together the four geographically disparate cultural stories.

Embers of Connection: A Journey Through Fire, Sand, and Country

Michele: As a cultural geographer my voyaging in Southern Sea Country with Lowell began six years ago in my struggle as an ethnic-minority woman of color to transform taken-for-granted or dominant knowledge systems in White institutional spaces of the university and the Western academy (Hunter and Lobo 2024). Lowell communicates his story of family, community, culture, and relationships with Sea Country by carving sand art (30 × 30 m) along beaches on the edges of the Southern Ocean with Indigenous ceremonial dancing footwork learned and practiced over several years in Warrnambool (Victoria) where he grew up. He then uses drone technologies to capture the sand art. These images are printed, exhibited at community galleries, and sold. The artwork is a story that brings together sacred and kinetic energies Lowell senses in the moment—the wind, the waves, the sun, and the sand (Hunter and Lobo 2024). But the sand artwork *Embers of Connection: A Journey Through Fire, Sand and Country* at the exhibition *The Fire Within* was carved by Lowell within the Alfred Deakin Prime Ministerial Library, Deakin University (Victoria). There are challenges in engaging in digital storytelling in this space named after Alfred Deakin, the architect of the Immigration Restriction Act, 1901 or Australia’s White Australia Policy.

Lowell: I think coming into this particular space, it was, “Oh, how can I bring Country into this space?” It is a very square space, a colonial space. There are images of colonial days and it is certainly not a space that holds a lot of culture from my ways and my lens. So I think how can I frame this space literally in a way that has a lot of meaning and will get people to think about past experiences, past government policies, and the challenges we face. There is a visual aspect to it, but I also want to be able to bring in sounds. Working with Martin and his team we were able to bring in audio of Country into this space, in particular, my own Nyul Nyul Country. Those sounds of Country were really special to me. So, although it is not my usual place where I create sand art, there are so many elements that are coming into this space that really make me feel like I’m engaging with them, which I would normally be doing.

Martin: We blacked out the sign “Alfred Deakin Prime Ministerial Library” before installing a screen. We twinned a digital screen with particle people or point cloud people to the artwork and created a soundscape through audio installations. In terms of data visualization of landscapes, the point cloud is effectively the geometry of an environment rendered only as its points. And this cloud of points brings together a connection to the space. But of course, it is all about the gaps between the points that is the most interesting thing for me. We did not want literal representations of people, their faces to be identifiable or dressed in clothes. But at the same time, we didn’t want to render them as nude/male/female, or of a particular race. So, point cloud people or particle people are a way of representing people in a way that makes a connection to traditional Australian Indigenous dot painting, and to the idea of datafied landscapes. It is an analogy for what people represent in this ancestral landscape (see [Figure 3](#)).

In addition to the visual media, a visitor to the exhibition is immersed in a soundscape of audio—a call to the ancestors, the sound of digeridoo, clapsticks, ceremonial songs, crashing waves from Lowell’s ancestral home in Beagle Bay (Nyul Nyul Country, Western Australia), and the crackle of fire we lit in the You Yangs Regional Park on Wadawurrung Country (Victoria).

Michele: Entering the exhibition space, I was immersed in the material, sonic, and spiritual realities of Nyul Nyul, Wadawurrung, and Gunditjmarra Country. This immersion was an invitation to

participate in Lowell’s connection to many Countries which echoes with the NAIDOC week theme, “Keep the fire burning! Blak, loud and proud.”

Lowell: NAIDOC is an opportunity for us to come together, be vocal, and take responsibility in sharing our stories, and culturally educating people without that burnout, cultural load, and barrier that was always part of the many cultural awareness workshops I ran with corporate firms and government agencies. The concentric circles in the sand artwork show how my body-spirit is programmed in dancing saltwater connections to Country through my ancestors. Matter becomes imbued with spiritual energy. The circles show layers of red, yellow, and the white sand, which is almost invisible, suggesting that not all see our love for culture (see [Figure 3](#)).

Martin: It adds a layer that is almost invisible but not invisible; another layer of cultural integrity or another layer of connection that I think is quite lovely.

Lowell: Who we are is learned from our elders. The earth pigments of red, yellow, and white ocher fell off their painted bodies, legs, and feet as they danced. I have been dancing these patterns of ocean connection, saltwater connection, and saltwater healing all my life. This artwork is 6 m × 7 m and echoes my connections with the 1967 Referendum when we were first counted as part of the Australian population. I find it hard to explain, but this artwork tries to capture those deep personal as well as spiritual experiences. I know personal pain because my mother was a member of the Stolen Generation and forcibly separated from her family. Through this installation I wanted to bring the pain but also the cultural traditions into this colonial space rather than leave it at the door.

I have been loved into being at Warrnambool, and the fire burning in the bowl at the center of the artwork tries to capture this good energy that radiates and ripples out. That bowl has traveled with us from the You Yangs (Victoria) and had a fire within it. That fire has not really gone out and now burns as a digital fire projected on the screen behind the artwork. All of this is made possible by motion capture of my dancing body and collective work in the digital laboratory. Digital elements and animation have always been important in my artwork and storytelling.

There was lots of energy, spiritual energy, put into this space on the opening night (of the exhibition) by the Gunditjmarra dancers. It seemed the artwork



Figure 3. Composite image of Lowell Hunter creating *Embers of Connection* artwork, motion capture, and exhibition launch. Image by Martin Potter.

was growing a community of people who genuinely wanted to be there and needed this connection. We face barriers just to be part of these institutions. My hope is that this artwork will inspire Aboriginal people to “talk up” rather than shy away from who we are.

I feel like I have been given this responsibility to do this work because it is important for the next generation to come. And, yes, it is really rewarding to know that you are playing a part in that bigger picture that will help in the continuation of our culture. Then the baton gets passed on to the younger generation. I think about my kids and what they have been exposed to over the years—being connected to culture, it has been amazing. My hope is by doing this work they will continue in that responsibility of practicing culture, keeping culture

strong and alive, and sharing culture. But the main thing I think for me is for them to have a really strong sense of self and strong sense of identity and strong sense of belonging of who they are so they can own that, and they do not need to shy away. I have had to experience generation upon generation of my family feeling shit in this country because of who we were. So, what I hope for my children and future generations to come is that they do not have to experience those challenges that our people have faced for many years and still do now. There will be challenges but by being culturally strong they will have the confidence to talk up.

Cassandra: It is interesting that Martin mentions layers. In listening to Lowell, there are two components of expression within his work; the work has strength in an ability to message Indigenous and

non-Indigenous audiences in different ways, communicating different lessons. The simultaneous nature of it is quite powerful, very cross-cultural.

Making Stories Public: Spreading New Messages

“Nothing about us without us” is a common refrain among Indigenous Australians and Indigenous geographers that we take seriously in this article as we come together to make public the “right story” of creation that can heal Country amid “white eco-apocalyptic” (Gergan, Smith, and Vasudevan 2020, 105) futures in the colonial Anthropocene. Working together this article experiments with slowing down dominant Western scientific stories of planetary crises and spreading new messages from Country. Indigenous geographer Niiyokamigaabaw Deondre Smiles (Jones et al. 2024), a citizen of the Leech Lake Band of Ojibwe, argued that “public-facing work” (6) offers opportunities to make “Indigenous worldviews” (5) and geographies of the environment more meaningful, accessible, and impactful rather than superficial and extractive.

In her introduction to Ursula Le Guin’s *Carrier Bag Theory of Fiction*, Haraway (2019) returned to a refrain she first shared in *Staying with the Trouble* (Haraway 2016).

It matters what stories we tell to tell other stories with; it matters what concepts we think other concepts with. (Haraway 2019, 10)

It is material what materials we use to think other material with. In this setting the material we think through are flowers and sand, ocher and fire, water and sediment. They are seasons and epochs. Like LeGuin, we seek with a feeling of urgency, the nature, subject, words of the other story, the untold one, the life story.

In this article Lorraine and Lowell offer the gift of sacred stories and life stories with humility and generosity. Cassandra, Michele, and Martin unlearn the Western stories of landscapes and seascapes and listen with respect to the stories of Country told by Lorraine and Lowell. At the *Place of Flowers*, Lorraine immerses us and the public in the material realities of Larrakia Country that change with the seasons. These changes through deep time are voiced

by the waterlily, the wind, and the birds, which transform Western scientific stories of Girraween Lagoon that Cassandra explores through fossil pollen grains and lake sediments using a microscope. In Wadawurrung and Nyul Nyul Sea Country, Lowell immerses us and the public in the sacred significance of the crackling fire, the salty sea breeze, the sunlight, and the sand, to tell ancient stories of Australian seascapes as material, sacred, sentient, and kin. As a geographer of Indian heritage, Michele listens to these stories and learns how to belong with Australian Sea Country that is threatened by fossil fuel extraction.

This article contributes to understanding how collaborative research and immersive technologies can engage public audiences to feel, hear, see, and be touched by Indigenous deep time stories of the earth. This multisensory immersion in Country is enabled through the curation of virtual, augmented, and extended realities that decolonize the digital and spread new messages about Girraween Lagoon in the film *The Earth Above* and the site-specific artwork, *Embers of Connection*. Although Michele watched Girraween Lagoon in the Melbourne Planetarium, the immersive storytelling experience was more intimate and engaging in the small 5-m dome that was hired for the *Fire Within* exhibition. The tools of immersive technologies functioned in producing “empathy machines” (Miranda, 2024, 528) that spread cultural awareness among people who visited the exhibition. The open dome and the exhibition space with several entry and exit points enables the audience to engage in deep time ancestral listening and intergenerational listening as they move virtually through Lake Country and Sea Country. Together we can engage diverse publics and enact imaginaries of the Earth otherwise using new messages and new media.

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References

- Bawaka Country, L. Burarrwanga, R. Ganambarr, M. Ganambarr-Stubbs, B. Ganambarr, D. Maymuru, K. Lloyd, L. Daley, S. Suchet-Pearson, S. Wright, et al. 2023. Bala ga' lili: Communicating, relating and co-creating balance through relationships of reciprocity. *Social & Cultural Geography* 24 (7):1203–23. doi: [10.1080/14649365.2022.2052166](https://doi.org/10.1080/14649365.2022.2052166).
- Buku-Larrnggay Mulka Centre. 1999. *Saltwater: Yirrkalá bark paintings of Sea Country: Recognising Indigenous sea rights*. Neutral Bay, Australia: Jennifer Isaacs.
- Colloff, M. 2020. *Reconciling people and environment: Landscapes of our hearts*. Melbourne, Australia: Thames and Hudson.
- Freire, P. 1970. *Pedagogy of the oppressed*. New York: Continuum International.
- Gergan, M., S. Smith, and P. Vasudevan. 2020. Earth beyond repair: Race and apocalypse in collective imagination. *Environment and Planning D: Society and Space* 38 (1):91–110. doi: [10.1177/0263775818756079](https://doi.org/10.1177/0263775818756079).
- Griffiths, T. 2018. The planet is alive. In *Writing the country*, ed. A. Hay. *The Griffith Review* 63:61–89. Melbourne: Text Publishing.
- Haraway, D. 2016. *Staying with the trouble: Making kin in the Chthulucene*. Durham, NC: Duke University Press.
- Haraway, D. 2019. Introduction. In *The carrier bag theory of fiction*, ed. U. K. Le Guin, 9–21. London: Ignota.
- Harle, J., A. Abdilla, and A. Newman. 2018. *Decolonising the digital: Technology as cultural practice*. Sydney, Australia: Tactical Space Lab.
- Hunter, L., and M. Lobo. 2024. Climate change and oceanic responsibilities: Listening and dancing with saltwater country, Australia. In *Planetary justice: Stories and studies of action, resistance and solidarity*, ed. M. Lobo, E. Mayes, and L. Bedford, 71–86. Bristol, UK: Bristol University Press.
- Jones, R., A. Kocher, F. Sultana, D. Smiles, K. McSweeney, and P. Molnar. 2024. Interventions on public geographies. *Political Geography* 111:103007:1–9. doi: [10.1016/j.polgeo.2023.103007](https://doi.org/10.1016/j.polgeo.2023.103007).
- Kwaymullina, A. 2020. *Living on stolen land*. Broome, Australia: Magabala Books.
- Lambert, J. 2012. *Digital storytelling: Capturing lives, creating community*. London and New York: Routledge.
- Langton, M. 2023. *The welcome to country handbook: A guide to Indigenous Australia*. Richmond, Australia: Hardie Grant.
- Liboiron, M. 2020. Exchanging. In *Transmissions: Critical tactics for making and communicating research*, ed. K. Jungnickel, 89–107. Cambridge, MA: MIT Press.
- Lobo, M. 2024. Commentary: Decolonial leaps in more-than-human geographies. *Dialogues in Human Geography* 2024:1–4. doi: [10.1177/20438206241289398](https://doi.org/10.1177/20438206241289398).
- Lobo, M., and M. Parsons. 2023. Decolonizing ocean spaces: Saltwater co-belonging and responsibilities. *Progress in Environmental Geography* 2 (1–2):128–40. doi: [10.1177/27539687231179231](https://doi.org/10.1177/27539687231179231).
- Miranda, J. C. 2024. Immersive technologies: New ways to visualise a possible future world. In *Handbook of social impact assessment and management*, ed. F. Varclay and A. M. Esteves, 517–30. Northampton, MA: Edward Elgar.
- Morehouse, H., and M. Cigliano. 2021. Cultures and concepts of ice: Listening for other narratives in the Anthropocene. *Annals of the American Association of Geographers* 111 (3):913–20. doi: [10.1080/24694452.2020.1792266](https://doi.org/10.1080/24694452.2020.1792266).
- Tjanpi Desert Weavers. 2020. Kungkarangkalpa [Seven Sisters] [Sculpture]. National Gallery of Australia, Canberra, Australia. Accessed February 10, 2025. <https://nga.gov.au/stories-ideas/tjanpi-desert-weavers/>.
- Watson, D. 2014. *The bush*. Victoria, Australia: Penguin/Random House.
- Whyte, K. 2020. Too late for indigenous climate justice: Ecological and relational tipping points. *WIREs Climate Change* 11 (1):1–7. doi: [10.1002/wcc.603](https://doi.org/10.1002/wcc.603).
- Wijnjorrotj, P. 2005. *Jawoyn plants and animals*. Darwin, Australia: Northern Territory Government, Department of Natural Resources and Environment.
- Yunkaporta, T. 2024a. Deep time diligence: An interview with Tyson Yunkaporta, February 19, 2024. Accessed September 30, 2024. <https://emergencemagazine.org/interview/deep-time-diligence/>.
- Yunkaporta, T. 2024b. *Right story, wrong story: Adventures in Indigenous thinking*. Melbourne, Australia: Text Publishing.

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